

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claims 1-10 (canceled).

Claim 11 (new): A laser element driving apparatus comprising:

a laser element arranged to vary a light intensity corresponding to a current that flows thereto;

a photodetection element arranged to monitor and convert the light intensity of the laser element to electric signals;

an emission control switch arranged to control the current flowing to the laser element;

a feedback amplifier arranged to control the emission control switch by feeding back electric signals of the photodetection element; and

an emission control switch controlling circuit arranged to determine as abnormal a current flowing continuously to the laser element for a predetermined time from the beginning of light emission of the laser element, and to turn OFF the emission control switch.

Claim 12 (new): A laser element driving apparatus comprising:

a laser element arranged to vary a light intensity corresponding to a current that flows thereto;

a photodetection element arranged to monitor and convert the light intensity of the laser element to electric signals;

an emission control switch arranged to control the current flowing to the laser element;

a feedback amplifier arranged to control the emission control switch by feeding back electric signals of the photodetection element; and

an emission control switch controlling circuit arranged to control the emission control switch such that the current flowing to the laser element, when the laser element begins to emit light, is gradually increased.

Claim 13 (new): The laser element driving apparatus according to Claim 12, wherein the emission control switch controlling circuit is arranged to determine as abnormal a current flowing continuously to the laser element for a predetermined time from the beginning of light emission of the laser element, and to turn OFF the emission control switch.

Claim 14 (new): The laser element driving apparatus according to Claim 12, wherein the emission control switch controlling circuit includes a capacitor and an emission stop switch and arranged such that when the laser element begins to emit light, the emission control switch is forced to turn OFF and the capacitor is charged by turning the emission stop switch ON, and after a predetermined time has elapsed, the emission control switch is controlled by turning the emission stop switch OFF and discharging the capacitor, and then the current flowing to the laser element is gradually increased.

Claim 15 (new): The laser element driving apparatus according to Claim 14, wherein the emission control switch controlling circuit is arranged to determine as abnormal a current flowing continuously to the laser element for a predetermined time from the beginning of light emission of the laser element, and to turn OFF the emission control switch by turning ON the emission stop switch.

Claim 16 (new): The laser element driving apparatus according to Claim 11, wherein the emission control switch controlling circuit includes an emission stop switch, and is arranged to turn OFF the emission control switch by turning ON the emission stop switch.

Claim 17 (new): The laser element driving apparatus according to Claim 15, further comprising an oscillator arranged to output a reference clock for counting the predetermined time from the beginning of light emission of the laser element up to the determination of abnormality, wherein oscillation of the oscillator is stopped when the abnormality has been determined.

Claim 18 (new): The laser element driving apparatus according to Claim 17, further comprising a power source switch arranged between a power source and an inner power source, and which opens and closes corresponding to intermittent control signals, wherein the inner power source supplies power to the emission control switch, the feedback amplifier, and the emission stop switch, and a current drive capacity of the emission stop switch is higher than a current drive capacity of a sink current side on the feedback amplifier.

Claim 19 (new): The laser element driving apparatus according Claim 18, further comprising a fail-safe circuit which includes a counter arranged to start from a rise of the inner power source, and to count the number of the reference clock of the oscillator, wherein when the counter reaches the predetermined count, the fail-safe circuit is arranged to determine an abnormality and output a signal that causes the emission stop switch to turn ON.

Claim 20 (new): The laser element driving apparatus according Claim 18, further comprising a soft-start circuit which includes a counter arranged to start from the change of the intermittent control signal when the power source switch is closed, and counts the number of the reference clock of the oscillator, wherein when the counter reaches the predetermined count, the soft-start circuit outputs a signal that turns OFF the emission stop switch so that the capacitor of the emission control switch controlling circuit discharges.

Claim 21 (new): The laser element driving apparatus according to Claim 16, further comprising an oscillator arranged to output a reference clock for counting the

predetermined time from the beginning of light emission of the laser element up to the determination of abnormality, wherein oscillation of the oscillator is stopped when the abnormality has been determined.

Claim 22 (new): The laser element driving apparatus according to Claim 21, further comprising a power source switch arranged between a power source and an inner power source, and which opens and closes corresponding to intermittent control signals, wherein the inner power source supplies power to the emission control switch, the feedback amplifier, and the emission stop switch, and a current drive capacity of the emission stop switch is higher than a current drive capacity of a sink current side on the feedback amplifier.

Claim 23 (new): The laser element driving apparatus according Claim 22, further comprising a fail-safe circuit which includes a counter arranged to start from a rise of the inner power source, and to count the number of the reference clock of the oscillator, wherein when the counter reaches the predetermined count, the fail-safe circuit is arranged to determine an abnormality and output a signal that causes the emission stop switch to turn ON.

Claim 24 (new): The laser element driving apparatus according Claim 22, further comprising a soft-start circuit which includes a counter arranged to start from the change of the intermittent control signal when the power source switch is closed, and counts the number of the reference clock of the oscillator, wherein when the counter reaches the predetermined count, the soft-start circuit outputs a signal that turns OFF the emission stop switch so that a capacitor of the emission control switch controlling circuit discharges.